



Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Geometry End-of-Course Examination

April 2006 Administration

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Arkansas Department of Education

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PART I Overview – 2006 Geometry

The criterion-referenced tests implemented as part of the **Arkansas Comprehensive Testing, Assessment, and Accountability Program** (ACTAAP) are being developed in response to Arkansas Legislative Act 35, which requires the State Board of Education to develop a comprehensive testing program that includes assessment of the challenging academic content standards defined by the Arkansas Curriculum Frameworks.

As part of this program, students in Arkansas public schools who had completed or were completing Geometry by the end of the spring semester participated in the *Geometry End-of-Course Examination* in April 2006.

This *Released Item Booklet* for the *Geometry End-of-Course Examination* contains test questions or items that were asked of students during the April 2006 operational administration. The test items included in Part II of this booklet are those items that contributed to the student performance results for that administration.

Students were given approximately two hours each day to complete assigned test sessions during the two days of testing in April 2006. Students were permitted to use a calculator for both multiple-choice and open-response items. Students were also supplied with a reference sheet to be used so that all students would have equal access to this information during testing. (See the reference sheet on page 31 of this booklet.) All of the multiple-choice items within this booklet have the correct response marked with an asterisk (*). The open-response questions are listed with scoring guides (rubrics) immediately following. These rubrics provide information on the scoring model used for Geometry.

The development of the *Geometry End-of-Course Examination* was based on the *Arkansas Geometry Mathematics Curriculum Framework*. This framework has distinct levels: *Strands* to be taught in concert, *Content Standards* within each Strand, and *Student Learning Expectations* within each Content Standard. An abridged version of the *Arkansas Geometry Mathematics Curriculum Framework* can be found in Part III of this booklet. It is important to note that this abridged version lists only the predominant Strand, Content Standard, and Student Learning Expectation associated with each item. However, since many key concepts within the *Arkansas Geometry Mathematics Curriculum Framework* are interrelated, in many cases there are other item correlations or associations across Strands, Content Standards, and Student Learning Expectations.

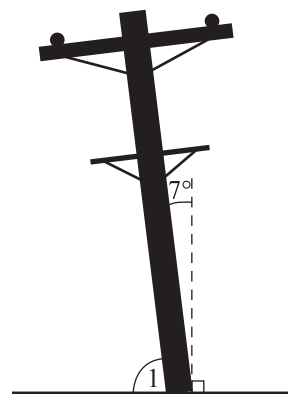
Part IV of the *Released Item Booklet* contains a tabular listing of the Strand, Content Standard, and Student Learning Expectation that each question was designed to assess. The multiple-choice and open-response items found on the *Geometry End-of-Course Examination* were developed in close association with the Arkansas education community. Arkansas teachers participated as members of the Geometry Content Advisory Committee, providing routine feedback and recommendations for all items. The number of items associated with specific Strands, Content Standards, and Student Learning Expectations was based on approximate proportions suggested by the Content Advisory Committee, and their recommendations were accommodated to the greatest extent possible given the overall test design. Part IV of the *Released Item Booklet* provides Arkansas educators with specific information on how the *Geometry End-of-Course Examination* items align or correlate with the *Arkansas Geometry Mathematics Curriculum Framework* to provide models for classroom instruction.

1. A prime number is a whole number greater than 1 that is divisible only by 1 and the number itself. The number 37 is divisible only by 1 and 37. Therefore, 37 is a prime number.

What type of reasoning does this show?

- A. composite reasoning
 - * B. deductive reasoning
 - C. inductive reasoning
 - D. prime reasoning
2. A 225-mile bike relay had 5 sections. Marlene rode the 75 to 120 mile section. Water stops were located at the halfway point of each section. Where could Marlene have expected to see a water stop on her portion of the race?
- A. 82.5 mile mark
 - B. 90.0 mile mark
 - * C. 97.5 mile mark
 - D. 112.5 mile mark
3. Dan put a fence around his rectangular garden. The garden is 50 feet long and 35 feet wide. How many feet of fencing did Dan use?
- A. 85
 - B. 160
 - * C. 170
 - D. 1,750

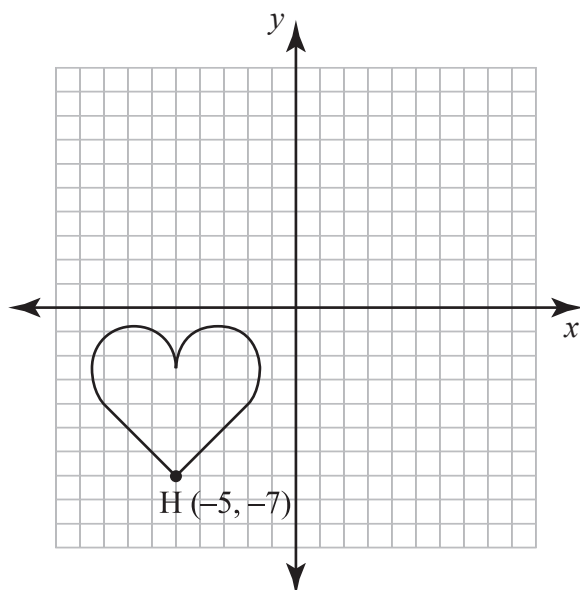
Use the figure below to answer question 4.



(Not drawn to scale.)

4. A pole sits on level ground. The pole is leaning 7° to the left of vertical, as shown in the drawing. What is the measure of $\angle 1$?
- * A. 83°
 - B. 93°
 - C. 97°
 - D. 107°
5. The following information is known about the quadrilateral ABCD:
- \overline{BC} is parallel to \overline{AD} .
 - \overline{AB} is not congruent to \overline{CD} .
 - $\angle CDA$ is a right angle.
- Which must be true of quadrilateral ABCD?
- A. ABCD is a rhombus.
 - B. ABCD is a rectangle.
 - * C. ABCD is a trapezoid.
 - D. ABCD is a parallelogram.

Use the graph below to answer question 6.



6. The point of the heart (H) has a coordinate of $(-5, -7)$ as shown above. The heart is reflected over the y -axis and then reflected over the x -axis. After both reflections, what are the coordinates of the point H?

- A. $(-5, -7)$
- B. $(-5, 7)$
- C. $(5, -7)$
- * D. $(5, 7)$

7. A cylinder-shaped carton of ice cream is cut by a plane that is **perpendicular** to the bases. What is the shape of the cross-section?

- A. circle
- B. ellipse
- * C. rectangle
- D. triangle

8. Which shows deductive reasoning?

- A. The last 5 times Ben ate pizza he had a headache the next day. Therefore, pizza makes Ben have headaches.
- * B. Fluoride in the drinking water reduced the chance of having cavities. Therefore, the chance of Ben having cavities is less because his drinking water contains fluoride.
- C. The teacher has returned the quizzes on Thursday in each of the last 5 weeks. Therefore, Ben's quiz for this week will be returned on Thursday.
- D. Ben earned 100% on his last 3 assignments. Therefore, he will earn 100% on the next assignment.

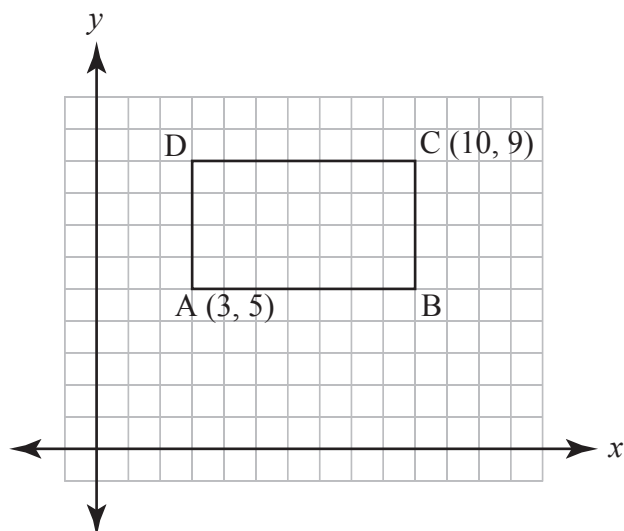
9. Aluminum, iron, oxygen, and silicon are the most common elements present in Earth's crust.

- There is less aluminum in Earth's crust than oxygen.
- There is more silicon in Earth's crust than aluminum.
- There is less iron in Earth's crust than aluminum.
- There is more oxygen in Earth's crust than silicon.

What is the correct order from the smallest amount to the largest amount of these elements present in Earth's crust?

- * A. iron, aluminum, silicon, oxygen
- B. iron, aluminum, oxygen, silicon
- C. aluminum, iron, silicon, oxygen
- D. iron, silicon, aluminum, oxygen

Use the graph below to answer question 10.



10. The graph above represents the floor of a new building. A straight electric cable will be placed from A to C. What is the length of the electric cable to the nearest tenth unit?

- A. 5.8 units
- * B. 8.1 units
- C. 13.5 units
- D. 19.1 units

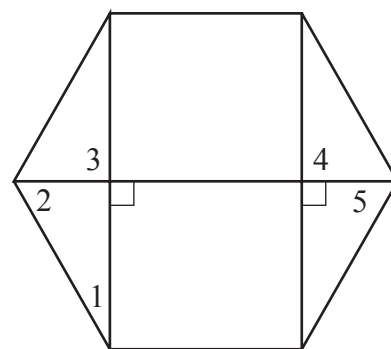
11. Ceres, Hygiea, Pallas, and Vesta are all asteroids.

- Ceres has a larger radius than Pallas.
- Hygiea has a smaller radius than Vesta.
- Pallas has a larger radius than Vesta.

What is the correct order from smallest radius to largest radius?

- A. Hygiea, Pallas, Vesta, Ceres
- * B. Hygiea, Vesta, Pallas, Ceres
- C. Vesta, Hygiea, Pallas, Ceres
- D. Vesta, Pallas, Hygiea, Ceres

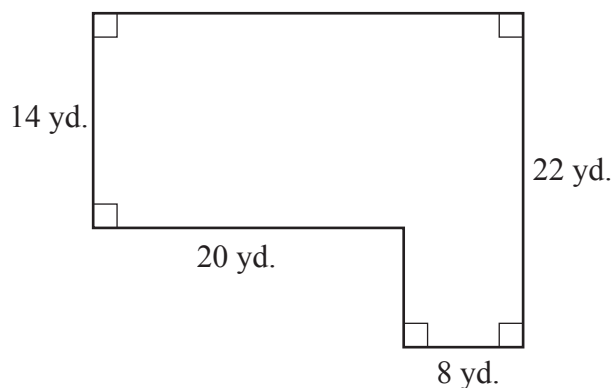
Use the figure below to answer question 12.



12. Which 2 angles in the regular hexagon above are supplementary?

- A. $\angle 1$ and $\angle 2$
- B. $\angle 1$ and $\angle 5$
- C. $\angle 2$ and $\angle 5$
- * D. $\angle 3$ and $\angle 4$

Use the figure below to answer question 13.

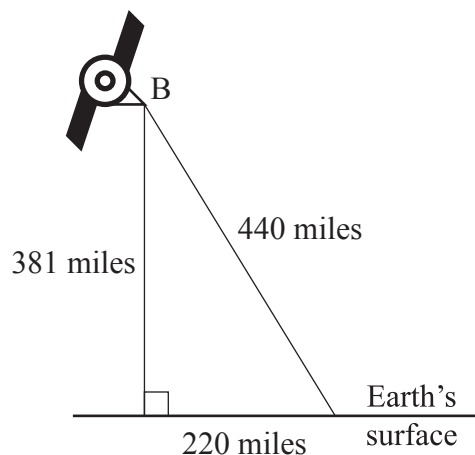


(Not drawn to scale.)

13. What is the area of the parking lot shown above?

- A. 100 yd.^2
- B. 280 yd.^2
- * C. 456 yd.^2
- D. 616 yd.^2

Use the following diagram to answer question 14.



(Not drawn to scale.)

14. The diagram shows the distance of a satellite from Earth's surface. Which represents $\cos B$?

A. 0.5000
 B. 0.5774
 * C. 0.8659
 D. 1.1549

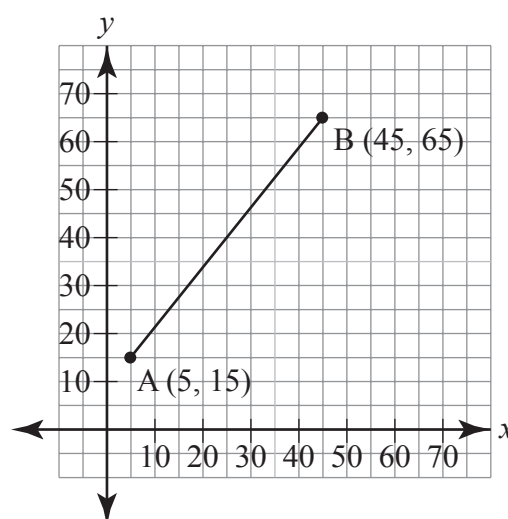
15. The diameter of a skateboard wheel is 60 mm. What is the circumference of the skateboard wheel to the nearest millimeter? Use $\pi = 3.14$.

* A. 188 mm
 B. 377 mm
 C. 2,826 mm
 D. 5,652 mm

16. A window is the shape of a hexagon. What is the sum of the interior angles of the window?

A. 180°
 B. 540°
 * C. 720°
 D. $1,080^\circ$

Use the graph below to answer question 17.



17. A television weather station is tracking a storm moving from point A to point B as shown on the graph above. The storm will be at the midpoint of \overline{AB} in 10 minutes. What are the coordinates of the midpoint of \overline{AB} ?

A. (20, 25)
 * B. (25, 40)
 C. (30, 35)
 D. (40, 25)

Use the equations below to answer question 18.

I

$$y = -2x + 4$$

II

$$y = -2x + 2$$

III

$$y = -\frac{1}{2}x + 1$$

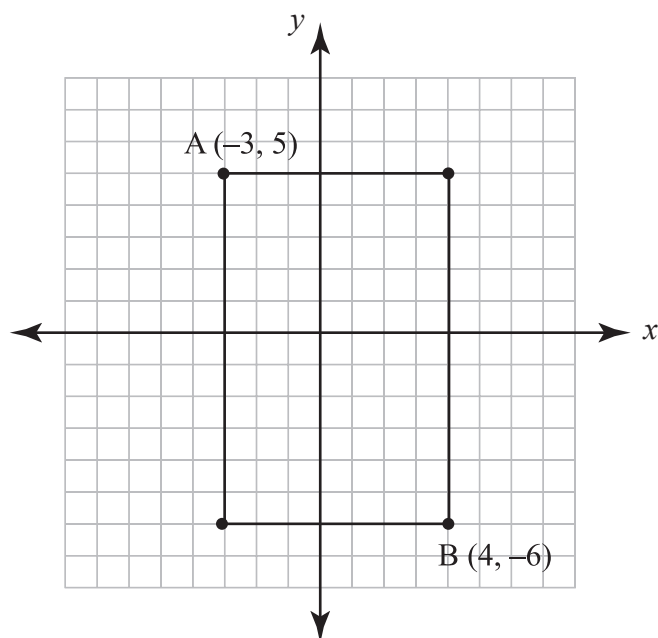
IV

$$y = \frac{1}{2}x + 3$$

18. Which 2 lines are **parallel**?

- * A. I and II
- B. I and IV
- C. II and III
- D. II and IV

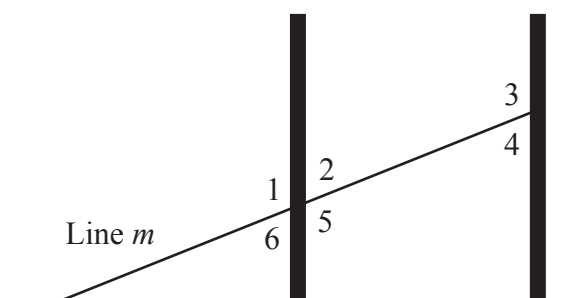
Use the graph below to answer question 19.



19. Which expression will calculate the length of \overline{AB} ?

- * A. $\sqrt{(-3-4)^2 + (5-(-6))^2}$
- B. $\sqrt{(-3-5)^2 + (4-(-6))^2}$
- C. $\sqrt{(-3+4)^2 + (5+(-6))^2}$
- D. $\sqrt{(-3+5)^2 + (4+(-6))^2}$

Use the figure below to answer question 20.



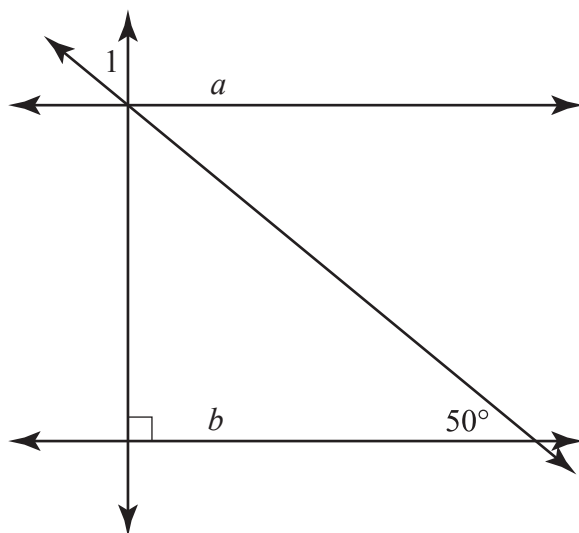
20. Line m represents a straight wire attached to 2 parallel telephone poles as shown above. Which statement is true?

- A. $\angle 2 \cong \angle 3$
- B. $\angle 3 + \angle 5 = 180^\circ$
- C. $\angle 4 + \angle 6 = 180^\circ$
- * D. $\angle 5 \cong \angle 3$

21. Shari, Millie, and Sally are sisters. Shari is 3 years older than Millie. Millie is 5 years older than Sally. What can you conclude using deductive reasoning?

- * A. Shari is 8 years older than Sally.
- B. Shari is the oldest child in her family.
- C. Sally is the youngest in her family.
- D. Shari is 8 years old.

Use the figure below to answer question 22.

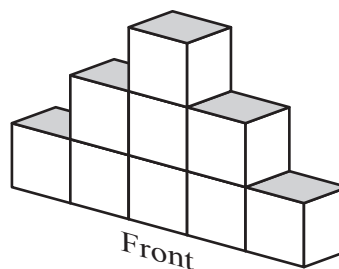


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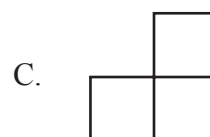
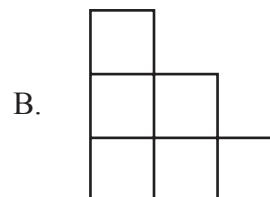
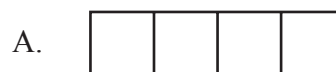
22. Line a and line b are parallel. Using the figure above, what is the measurement of $\angle 1$?

- * A. 40°
- B. 50°
- C. 130°
- D. 140°

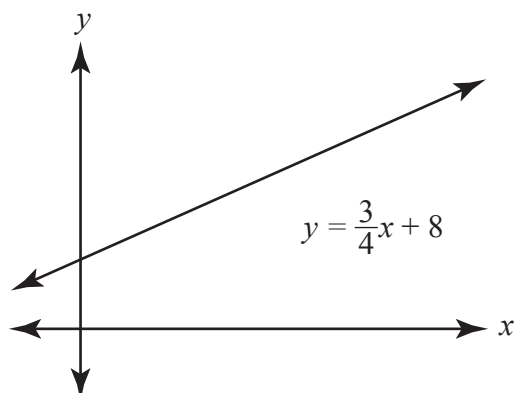
Use the figure below to answer question 23.



23. A 3-dimensional drawing is shown. Which could be 1 of the views?



Use the graph below to answer question 24.



24. Joel is laying out a maze for the city park. The graph above shows the location and equation of a row of bushes for the maze. A row of hay bales will be **perpendicular** to the row of bushes. Which equation could represent the row of hay bales?

* A. $y = -\frac{4}{3}x + 5$

B. $y = -\frac{3}{4}x + 6$

C. $y = \frac{3}{4}x + 3$

D. $y = \frac{4}{3}x + 2$

25. A cube measures $\frac{1}{2}$ in. along each edge. What is the volume of the cube?

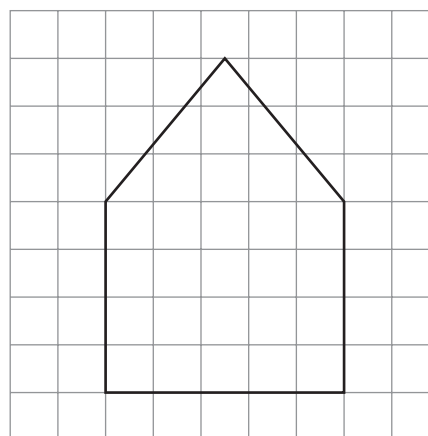
* A. $\frac{1}{8}$ in.³

B. $\frac{1}{4}$ in.³

C. $\frac{3}{4}$ in.³

D. $1\frac{1}{2}$ in.³

Use the figure below to answer question 26.



$\square = 36 \text{ ft.}^2$

26. A scale drawing of the side of a house is shown above. What is the best estimate of the area of the side of the house?

A. 700 ft.²

B. 850 ft.²

* C. 1,000 ft.²

D. 1,250 ft.²

Use the information below to answer question 27.

- Diane, Elena, and Felicity all play outfield positions on their high school softball team.
- The positions they play are, in no particular order, right field, center field, and left field.
- Diane does not play right field.
- Elena plays left field.

27. Which statement is true?

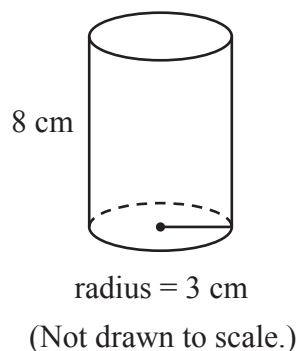
* A. Diane plays center field.

B. Elena plays right field.

C. Felicity plays left field.

D. Felicity does not play right field.

Use the figure below to answer question 28.



28. Another cylinder has a height 1.5 cm less than the cylinder shown above. What is the difference between the volumes of the 2 cylinders? Use $\pi = 3.14$.

- A. 10.60 cm^3
- B. 14.13 cm^3
- C. 28.26 cm^3
- * D. 42.39 cm^3

29. There are 4 different radio stations—KAWE, KNEW, KRAH, KWON—which broadcast at 4 different frequencies: 88.5, 90.1, 95.7, and 104.3.

- Neither 88.5 nor 104.3 is the broadcast frequency for KRAH.
- KWON has a higher broadcast frequency than KNEW.
- KAWE has a frequency of 90.1.

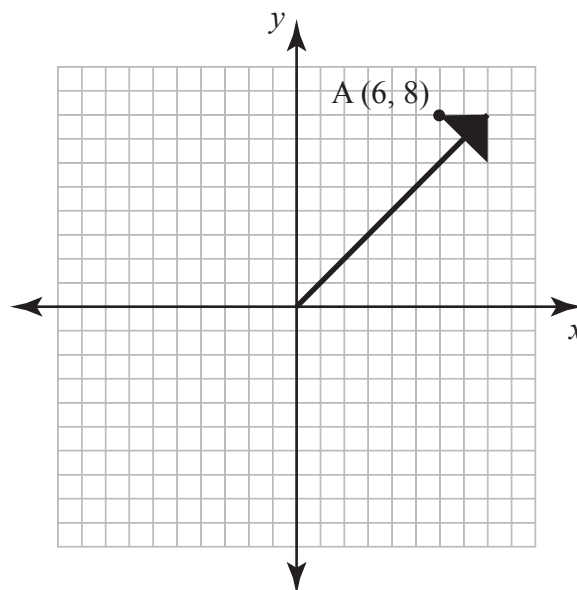
What station broadcasts at the frequency of 95.7?

- A. KAWE
- B. KNEW
- * C. KRAH
- D. KWON

30. A building has a flat roof. The roof is shaped like a trapezoid. What is the sum of the interior angles of the roof?

- A. 180°
- * B. 360°
- C. 540°
- D. 720°

Use the graph below to answer question 31.

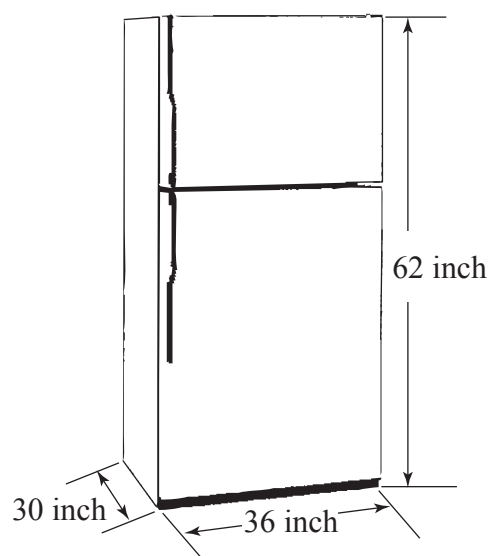


31. The arrow above represents the needle on a compass. The needle is rotated 180° in the clockwise direction. What are the coordinates of point A after the rotation?

- A. $(-8, -6)$
- B. $(-8, 6)$
- * C. $(-6, -8)$
- D. $(6, -8)$

Use the figure below to answer question 32.

Frances' Old Refrigerator



(Not drawn to scale.)

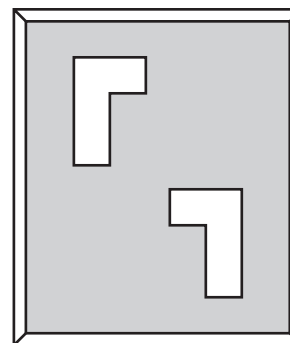
- 32.** Frances bought a new refrigerator to replace her old refrigerator shown above. Her new refrigerator has the same length and width as the old refrigerator, but is 8 inches higher. How many more cubic inches of space are in Frances's new refrigerator compared to her old refrigerator?

- * A. 8,640
- B. 14,880
- C. 17,856
- D. 25,440

- 33.** There are 28 students in Jay's class. Of these 28 students, 16 have a dog, 7 have a cat, and 11 have neither a dog nor a cat. How many students have both a dog and a cat?

- A. 1
- * B. 6
- C. 10
- D. 17

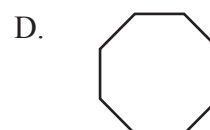
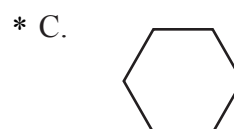
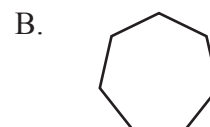
Use the figure below to answer question 34.



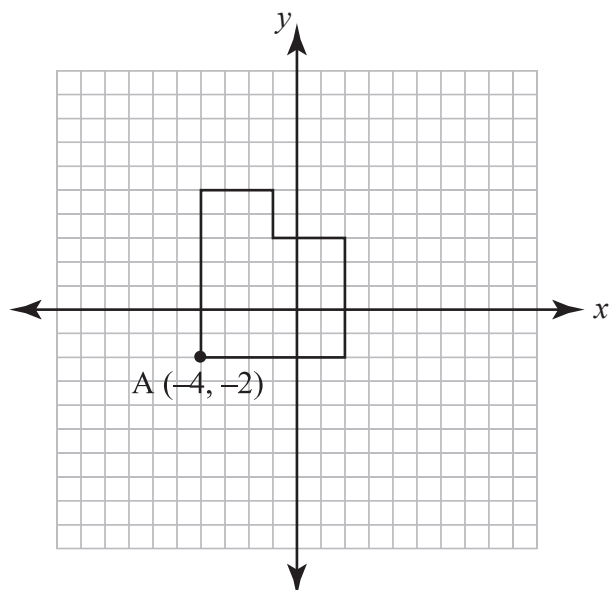
- 34.** Donna describes the piece of artwork shown above. Which is the most accurate description of this artwork?

- * A. One shape reflects and translates onto the other.
- B. One shape rotates onto the other.
- C. One shape reflects onto the other.
- D. One shape rotates and translates onto the other.

- 35.** Carmen chooses tiles to cover the floor. All the tiles are regular polygons. Which tile shape will tessellate the space?



Use the graph below to answer question 36.



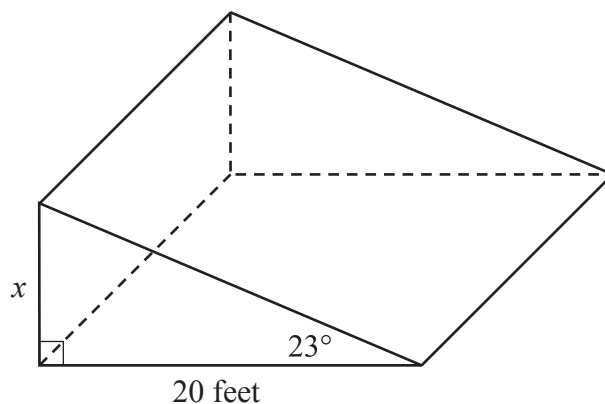
36. The polygon above is the mapping of a school building. What translation rule moves point A to the point $(0, 0)$?

- * A. $(x, y) \rightarrow (x + 4, y + 2)$
- B. $(x, y) \rightarrow (x + 2, y + 4)$
- C. $(x, y) \rightarrow (x - 4, y - 2)$
- D. $(x, y) \rightarrow (x + 0, y + 0)$

37. Which type of triangle has 2 angles that measure 60° ?

- * A. equilateral
- B. obtuse
- C. right
- D. scalene

Use the figure below to answer question 38.



(Not drawn to scale.)

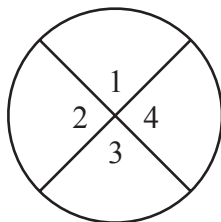
38. Keith is building a roof for a shed as shown above. What is the height of the tallest part of Keith's roof (x), rounded to the nearest tenth of a foot?

- A. 7.8
- * B. 8.5
- C. 18.4
- D. 21.7

39. The diameter of 1 circular garden is 20 feet. The diameter of another circular garden is 10 feet. How much smaller is the circumference of the smaller garden? Use $\pi = 3.14$.

- * A. 31.4 feet
- B. 62.8 feet
- C. 235.5 feet
- D. 942.0 feet

Use the figure below to answer question 40.



(Not drawn to scale.)

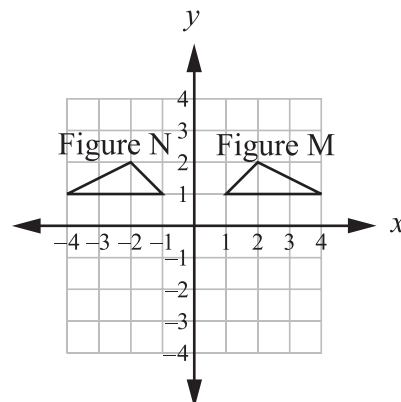
40. Mari created the circular window represented above. She knew that $\angle 1$ and $\angle 2$ were supplementary and that $\angle 1 \cong \angle 3$ because they were vertical angles. What **must** be true about $\angle 2$ and $\angle 3$?

- A. $\angle 2 \cong \angle 3$
- B. $\angle 2$ is complementary to $\angle 3$
- * C. $\angle 2$ is supplementary to $\angle 3$
- D. $\angle 2$ and $\angle 3$ are both right angles

41. Which is the equation of a line that is **parallel** to the line that passes through $(6, -1)$ and $(9, 1)$?

- A. $y = -\frac{3}{2}x + 1$
- B. $y = -\frac{2}{3}x + 2$
- * C. $y = \frac{2}{3}x + 3$
- D. $y = \frac{3}{2}x + 4$

Use the diagram below to answer question 42.



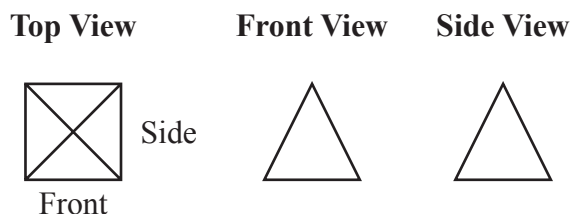
42. Which transformation describes the change from Figure M to Figure N?

- A. dilation
- * B. reflection
- C. rotation
- D. translation

43. A cereal box is 10.4 inches high, 7.4 inches long, and 2.3 inches wide. What is the volume of the cereal box rounded to the nearest cubic inch?

- A. 77
- B. 140
- * C. 177
- D. 236

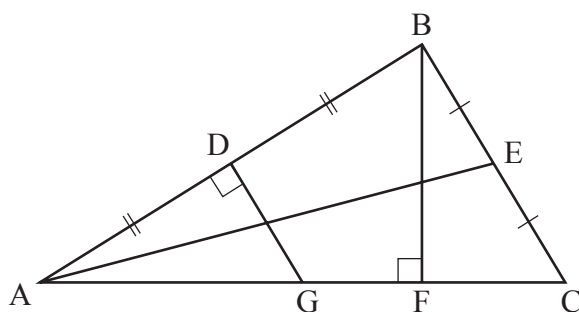
Use the figures below to answer question 44.



44. The figures above show the top, front, and side view of a polyhedron. What type of polyhedron is it?

- A. square prism
- * B. square pyramid
- C. triangular prism
- D. triangular pyramid

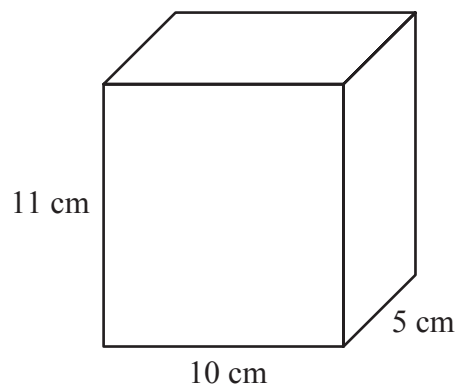
Use the figure below to answer question 45.



45. A city built a playground on a triangular shaped section of land represented by $\triangle ABC$ in the figure above. A sidewalk forms an altitude of the triangle. Which segment must be an altitude of $\triangle ABC$?

- A. \overline{AB}
- B. \overline{AE}
- * C. \overline{BF}
- D. \overline{DG}

Use the figure below to answer question 46.



(Not drawn to scale.)

46. A company is planning to sell juice in boxes represented by the figure shown above. What is the total surface area of the box?

- A. 330 cm^2
- B. 380 cm^2
- * C. 430 cm^2
- D. 550 cm^2

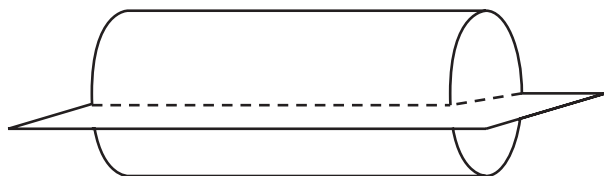
Use the information below to answer question 47.

- Vi has quarters, dimes, and nickels in her purse.
- The number of each type of coin is 3, 6, and 9 in no particular order.
- There are more dimes than quarters.
- There are 3 nickels in Vi's purse.

47. Which statement is true?

- * A. The dimes total \$0.90.
- B. The quarters total \$2.25.
- C. There are more nickels than quarters.
- D. There are twice as many dimes as nickels.

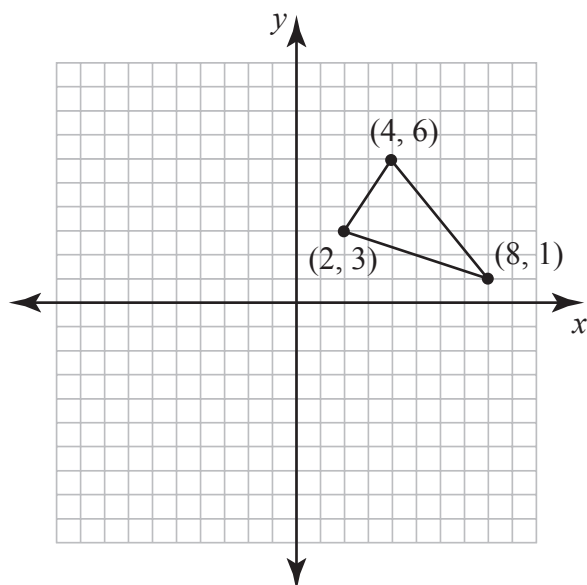
Use the figure below to answer question 48.



48. Cindi emptied the frozen apple juice from a can. She then cut the frozen juice horizontally as shown in the figure above. What shape did Cindi see along her cut?

- A. circle
- B. cylinder
- * C. rectangle
- D. sphere

Use the graph below to answer question 49.



49. Sacha planned a fabric design by reflecting the triangle shown above over the x -axis. Which list of coordinates represents the vertices of the triangle reflected over the x -axis?

- A. $(-2, -3), (-4, -6), (-8, 1)$
- B. $(-2, 3), (-4, 6), (-8, 1)$
- * C. $(2, -3), (4, -6), (8, -1)$
- D. $(3, 2), (6, 4), (1, 8)$

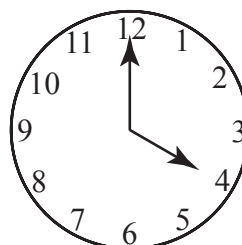
50. Brazil, Canada, Russia, and the United States all have large forest regions.

- The area of Brazil's forests is larger than the area of Canada's forests.
- The area of Canada's forests is larger than the area of the United States' forests.
- The area of Brazil's forests is smaller than the area of Russia's forests.

What is the correct order that lists the countries from largest forest area to the smallest forest area?

- A. Russia, Brazil, United States, Canada
- B. Russia, Canada, Brazil, United States
- C. Brazil, Russia, Canada, United States
- * D. Russia, Brazil, Canada, United States

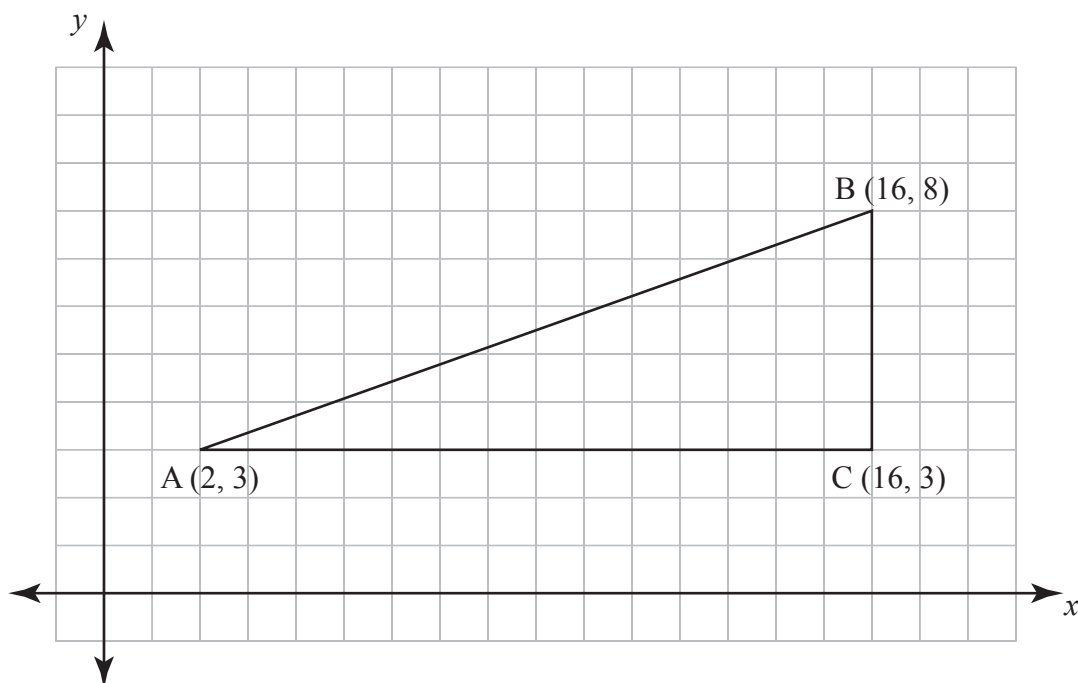
Use the figure below to answer question 51.



51. The minute hand on a clock points directly at 12. The hour hand points directly at 4. What is the measure of the smallest arc determined by the 2 hands?

- A. 60°
- * B. 120°
- C. 150°
- D. 240°

Use the graph below to answer question 52.



52. The triangle shown above represents a bike ramp Nate is building. He adds a straight support from point C to the midpoint of \overline{AB} . What are the coordinates of the midpoint of \overline{AB} ?

A. (7, 2.5)
 B. (8, 4)
 C. (9, 3)
 * D. (9, 5.5)

53. Mary is making a scale drawing of her bedroom. The actual length of the room is 12 feet. Mary uses a scale of 3 feet : 2 inches. What will be the length of Mary's drawing?

A. 6 inches
 * B. 8 inches
 C. 11 inches
 D. 18 inches

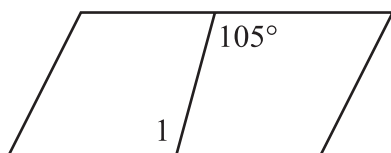
54. How much paper is needed to cover a rectangular bulletin board that is 29 in. wide and 37 in. high?

A. 132 in.²
 B. 536.5 in.²
 C. 957 in.²
 * D. 1,073 in.²

55. Ben will be painting a mural on the wall of a building. He wants to use the shape of a regular polygon that can form a tessellation. Which polygon could Ben use?

A. heptagon
 * B. hexagon
 C. octagon
 D. pentagon

Use the figure below to answer question 56.



(Not drawn to scale.)

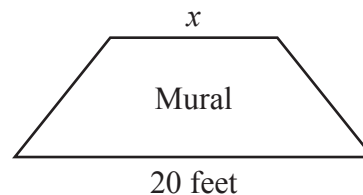
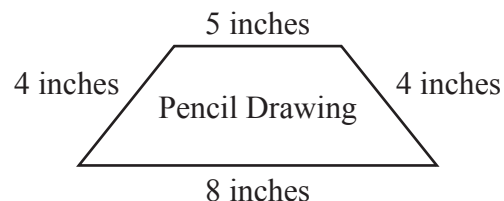
56. The pathway surrounding a playground forms a parallelogram. Another path cuts across the playground as shown above. What is the measure of $\angle 1$?

A. 75°
 B. 85°
 * C. 105°
 D. 115°

57. A box of tissues measures 4.5 inches wide, 4 inches high, and 9.5 inches long. What is the surface area of the box to the nearest square inch?

A. 99
 B. 171
 * C. 198
 D. 342

Use the figures below to answer question 58.



(Not drawn to scale.)

58. A trapezoid is being copied from a pencil drawing to a wall-sized mural. What is the length of the side marked x on the mural?

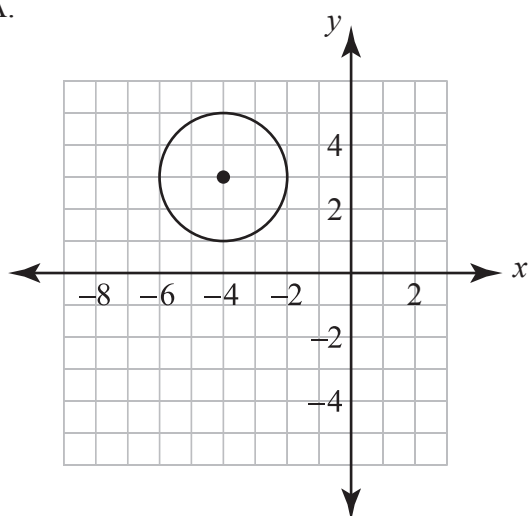
A. 10.5 feet
 * B. 12.5 feet
 C. 17 feet
 D. 32 feet

59. What is the process of using a rule to make a specific conclusion called?

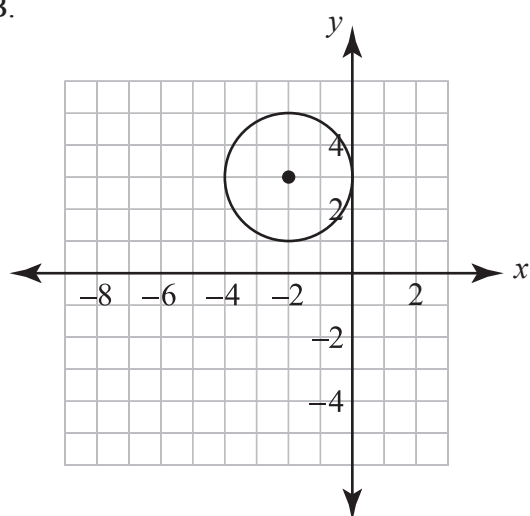
* A. deductive reasoning
 B. hypothesis testing
 C. inductive reasoning
 D. intuitive reasoning

60. The equation of a circle is $(x + 2)^2 + (y + 3)^2 = 4$. Which represents this equation?

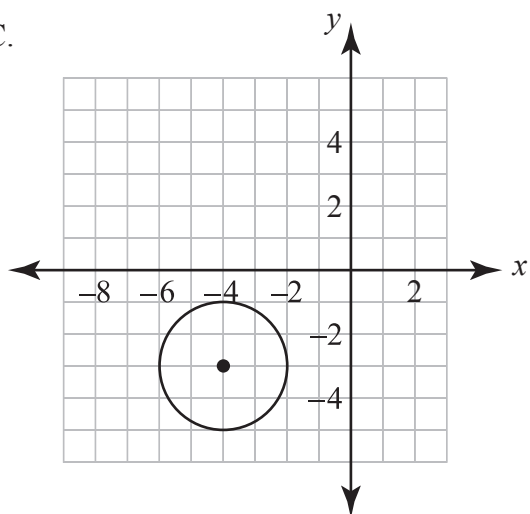
A.



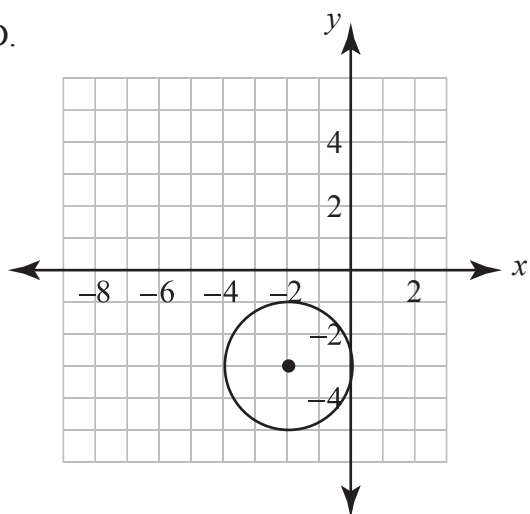
B.



C.



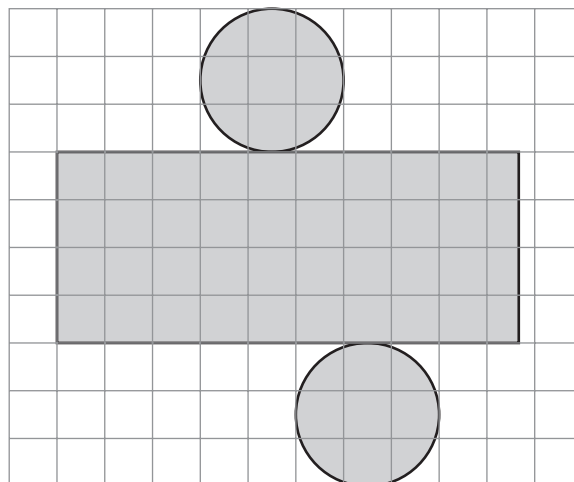
* D.



PART II Released Items – 2006 Geometry

GEOMETRY OPEN-RESPONSE ITEM A

- A. A company makes storage containers. A cylindrical barrel is 1 type of container. A 2-dimensional view (net) of the barrel is shown below.



(1 unit represents 1 foot.)

- What is the volume of the cylindrical barrel the company makes? Show or explain all of your work even if you use mental math or a calculator. Use $\pi = 3.14$.
- The company also makes boxes shaped like rectangular prisms. One storage box is 3 feet high, 5 feet long, and 2 feet wide. On the grid in your answer document, draw a 2-dimensional view (net) of the box.
- What is the volume of the box the company makes? Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The student earns 6 points. Correct labels: Parts 1 and 3: Cubic Ft. The response contains no incorrect work.
3	The student earns 5 points.
2	The student earns 3–4 points OR 2 points with each point from a different Part.
1	The student earns 2 points from the same Part OR the student earns 1 point OR some minimal understanding is shown: Ex. Part 1: correct radius or height – no other credit. Part 2: 2 out of 3 pairs of sides drawn with correct dimensions.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

PART II Released Items – 2006 Geometry

Solution and Scoring

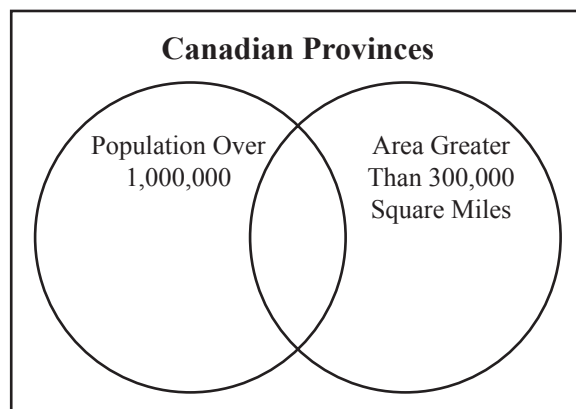
Note: Do not give credit in Parts 1 and/or 3 for repeating correct formulas only.

Part	Points
1	<p>2 points possible</p> <p>1 point: Correct answer: 28.26, 28.27, 28.3 or 28 (cubic feet).</p> <p>AND</p> <p>1 point: Correct and complete procedure shown or explained. Input for radius must be 1.5 units and height must be 4 units, or may be incorrect due to a calculation or counting, not procedural, error (i.e., do not give credit if $r = 3$ and/or $h = 9.5$). Work may contain a calculation or copy error. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $V = (3.14)(1.5^2)(4)$ or • “I multiplied pi times 1.5 times 1.5 times 4 to get the volume.” <p>Note: Do not give credit for incomplete work: Ex: $3.14 \times 9 = 28.26$.</p>
2	<p>2 points possible</p> <p>2 points: Correct net of 5 x 2 x 3 rectangular prism. Nets must have the following characteristics:</p> <ul style="list-style-type: none"> • All 6 sides have the correct dimensions: #’s are not required on the diagram, but the length and width of each rectangle must be the correct # of units on the grid. • All 6 sides are correctly positioned. <p>Or</p> <p>1 point: Partially correct net. Give credit for the following:</p> <ul style="list-style-type: none"> • 5 sides have the correct dimensions and are correctly positioned, 6th side is missing. or • The net (6 sides) represents a net of a rectangular prism, dimensions aren’t 5 x 2 x 3. or • 6 sides have the correct dimensions but are not correctly positioned.
3	<p>2 points possible</p> <p>1 point: Correct answer: 30 (cubic ft.).</p> <p>AND</p> <p>1 point: Correct and complete procedure shown or explained. Work may contain a calculation or copy error. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $V = (3)(5)(2)$ or • “I multiplied 3 times 5 times 2.” <p>Note: Do not give credit for incomplete work or repeating the formula: Ex: “It’s length x width x height.”</p>

PART II Released Items – 2006 Geometry

GEOMETRY OPEN-RESPONSE ITEM B

B. Copy the Venn diagram below into your Student Answer Document.



Canadian Provinces		Population Over 1,000,000	Area Greater Than 300,000 Square Miles
Alberta	Nova Scotia	Alberta	British Columbia
British Columbia	Nunavut	British Columbia	Ontario
Manitoba	Ontario	Manitoba	Quebec
New Brunswick	Prince Edward Island	Ontario	Northwest Territories
Newfoundland	Quebec	Quebec	Nunavut
Northwest Territories	Saskatchewan		
	Yukon Territories		

- Write each province in the correct location in the Venn diagram.
- Explain your reasoning for placing each of the provinces where you did.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM B

SCORE	DESCRIPTION
4	The student earns 5 points. Venn Diagram is enclosed in a rectangle (drawn or using grid). The response includes correct labeling of Rectangle and Circles. The response contains no incorrect work.
3	The student earns 4 points.
2	The student earns 2–3 points.
1	The student earns 1 point or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

Note: Correct labels are an issue only at the “4” level.

PART II Released Items – 2006 Geometry

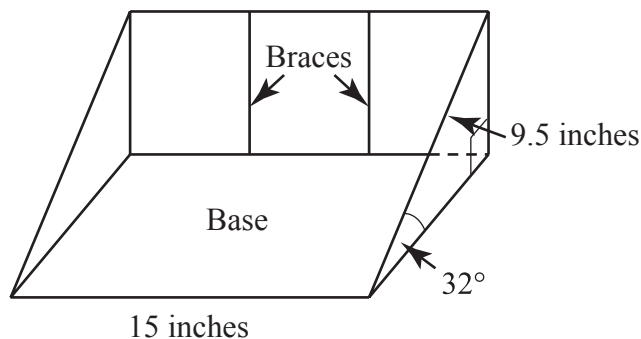
Solution and Scoring

Part	Points
1	<p>4 points possible Note: If circles are not labeled, assume the 1st circle is “Population > 1,000,000” and the 2nd circle is “Area > 300,000 Sq. Miles.” Spelling is not an issue.</p> <p>1 point: 1.) Correct provinces of <u>Alberta</u> and <u>Manitoba</u> (and no others) placed in the “Population > 1,000,000” location but not “Area > 300,000 Sq. Miles” location.</p> <p>AND</p> <p>1 point: 2.) Correct provinces of <u>Northwest Territories</u> and <u>Nunavut</u> (and no others) placed in the “Area > 300,000 Sq. Miles” location but not “Population > 1,000,000” location.</p> <p>AND</p> <p>1 point: 3.) Correct provinces of <u>British Columbia</u>, <u>Ontario</u> and <u>Quebec</u> (and no others) placed in the intersection of “Population > 1,000,000” and “Area > 300,000 Sq. Miles” location.</p> <p>AND</p> <p>1 point: 4.) Correct provinces of <u>New Brunswick</u>, <u>Newfoundland</u>, <u>Nova Scotia</u>, <u>Prince Edward Island</u>, <u>Saskatchewan</u>, and <u>Yukon Territories</u> (and no others) placed outside the circles but within the “Canadian Provinces” rectangle.</p>
2	<p>1 point possible Note: Do not give credit for Part 2 unless there are at least 2 locations that are correctly completed (at least 2 points given) in Part 1.</p> <p>1 point: Correct explanation of placement of provinces based on at least 2 locations that are correct in Part 1.</p> <p>Note: Do not give credit for incomplete or vague explanations: Ex: “I looked at the lists and put the provinces where it said.”</p>

PART II Released Items – 2006 Geometry

GEOMETRY OPEN-RESPONSE ITEM C

- C. Steven is making an aluminum shovel. The shovel has a slope of 32° to the horizontal, is 15 inches wide, and has a slant length of 9.5 inches, as shown in the figure below.



Steven needs to add 2 braces on the back side. The back side is perpendicular to the base.

1. What is the length of each brace that Steven needs to make, to the nearest hundredth of an inch? Show or explain all of your work even if you use mental math or a calculator.
2. To the nearest square inch, how much aluminum will Steven need for the base of the shovel? Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The student earns 4 points. Labels of “inches” in Part 1 and “Sq. in.” in Part 2 are not required but must not be incorrect. The response contains no incorrect work.
3	The student earns 3–3 ½ points.
2	The student earns 2–2 ½ points.
1	The student earns ½–1 ½ points or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

PART II Released Items – 2006 Geometry

Solution and Scoring

Part	Points
1	<p>2 points possible</p> <p>1 point: Correct answer: 5.03 (inches) (<u>Length of brace</u>).</p> <p>Or</p> <p>½ point: Answer “correct ” but not rounded to nearest hundredth – with some correct procedure shown:</p> <p style="padding-left: 40px;">Ex: 5.034 (inches) Ex: 5 (inches)</p> <p>AND</p> <p>1 point: Correct and complete procedure shown or explained.</p> <p>Work may contain a calculation, copy or rounding error.</p> <p>Lengths (x) may vary slightly depending on value used for $\sin 32^\circ$, as shown below.</p> <p>Give credit for the following or equivalent:</p> <p style="padding-left: 40px;">Ex: $\sin 32^\circ = x/9.5$, $x = (9.5)(.5299) = 5.03405 \rightarrow 5.0342$</p>

PART II Released Items – 2006 Geometry

Solution and Scoring (Continued)

Part	Points
2	<p>2 points possible</p> <p>1 point: Correct answer: 121 or 122 (sq. in.) (<u>Area of base</u>) or 120 if using tan or Correct answer rounded to nearest sq. in. based on answer given in Part 1.</p> <p>Or</p> <p>½ point: Answer “correct” but not rounded to nearest square inch – with some correct procedure shown: Ex: 120.8</p> <p>AND</p> <p>1 point: Correct and complete procedure shown or explained. Work may contain a calculation, copy or <u>rounding error in final answer</u>, or may be based on an incorrect answer for length of brace in Part 1. Length of base (y) may vary slightly depending on value used for $\cos 32^\circ$ and/or value used for length of brace from Part 1 (values on paper may differ from values used in calculator). Length may be rounded to the nearest hundredth or tenth, but not to the nearest whole #. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • 1st find the <u>Length of the base</u> (y) <ul style="list-style-type: none"> ▪ Using the Pythagorean Theorem: $y^2 + (5.03)^2 = (9.5)^2$ $y^2 + 25.3009 = 90.25$ $y^2 = 64.9491$ $y \approx 8.05910 \approx 8.1$ or ▪ Using trig. Functions: $\cos 32^\circ = y / 9.5$ or $\tan 32^\circ = 5.03 / y$ $y = (.8480)(9.5) = 8.056 \approx 8.1$ $y = 5.03 / .6249 = 8.049 \approx 8.0$ <p>Then find <u>Area of the base</u>: (Calculations will depend on method used to find the length of the base.) Ex: $15 \times (8.05910) = 120.8865 \approx 121$ or Ex: $15 \times (8.056) = 120.84 \approx 121$ or Ex: $15 \times (8.049) = 120.735 \approx 121$ or Ex: $15 \times 8.1 = 121.5 \approx 122$ or Ex: $15 \times 8.0 = 120$ (only with tan method)</p> <p>Or</p> <p>½ point: Partially correct procedure shown or explained:</p> <ul style="list-style-type: none"> • Correct procedures are used to find L and A, but rounds to nearest inch early. or • Work is incomplete with correct procedures used. Shows calculation of length of base OR area of base. or • Correct length of base is found with some work shown or explained. Procedure to find area is incorrect or missing. or • Correct area is found based on Length found using missing or incorrect procedure.

PART II Released Items – 2006 Geometry

GEOMETRY OPEN-RESPONSE ITEM D

- D.** A map of Ramsey County is drawn on a coordinate grid. The Norway River is represented by a straight line from the dam to the point where it intersects the Red River. The dam is located at point $(-8, -2)$. The Norway River intersects the Red River at point $(-2, 6)$. A new bridge will be built at the midpoint between the dam and the point where the rivers intersect.

1. What are the coordinates of the point at which the bridge will be built? Show or explain all of your work even if you use mental math or a calculator.

A highway will be built **parallel** to the Norway River. It will pass through the point $(6, 3)$. Planners need to know the linear equation that will represent the new highway on the coordinate grid.

2. Write the equation of the new highway in slope-intercept form. Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM D

SCORE	DESCRIPTION
4	The student earns 4 points. Part 1: $(-5, 2)$ or $x = -5$ and $y = 2$. The response contains no incorrect work.
3	The student earns 3–3 ½ points.
2	The student earns 2–2 ½ points.
1	The student earns ½–1 ½ points or some minimal understanding is shown: Ex. Correct slope of $4/3$ with no work shown. No other credit.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

PART II Released Items – 2006 Geometry

Solution and Scoring

Part	Points
1	<p>2 points possible</p> <p>1 point: 2 correct coordinates: $(-5, 2)$ or $x = -5$ and $y = 2$ or $-5, 2$ (but not at “4” level). Note: Do not give credit if there is obvious evidence of incorrect procedure.</p> <p>Or</p> <p>$\frac{1}{2}$ point: 1 correct coordinate: $x = -5$ or $y = 2$. Ex: $(-5, 4)$ or $(5, 2)$</p> <p>AND</p> <p>1 point: Correct and complete procedure used to find x AND y shown or explained. Give credit for the following or equivalent. Work may contain a calculation or copy – not a procedural – error:</p> <ul style="list-style-type: none"> Using the midpoint formula: $x = \frac{-8 - 2}{2} = \frac{-10}{2} = \#, \quad y = \frac{-2 + 6}{2} = \frac{4}{2} = \#$ <p>Or</p> <p>$\frac{1}{2}$ point: Give credit for the following:</p> <ul style="list-style-type: none"> Correct procedure used to find x OR y shown or explained: Ex: Correct procedure for x: $(-8 + -2) / 2 = -5$ Incorrect work (not a calc. or copy error) for y: $(-2 - 6) / 2 = \#$ or Incomplete or vague explanation to find x and y. Some correct procedure explained.

PART II Released Items – 2006 Geometry

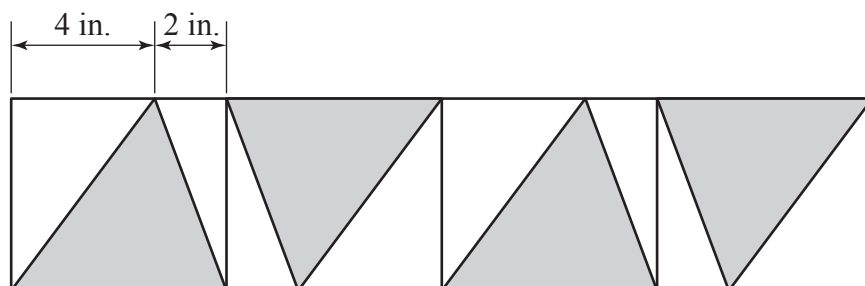
Solution and Scoring (Continued)

Part	Points
2	<p>2 points possible</p> <p>2 points: Correct equation in slope-intercept form ($y = mx + b$) with correct and complete procedure for both the slope (m) and the y-intercept (b). (Work may be based on slope using coordinates found in Part 1.) Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $y = \frac{4}{3}x - 5$ <p><u>Finding Slope:</u></p> <ul style="list-style-type: none"> ▪ $m = \frac{6 - (-2)}{-2 - (-8)} = \frac{8}{6} = \frac{4}{3}$ (or using $(-5, 2)$ $m = \frac{6 - 2}{-2 - (-5)} = \frac{4}{3}$) or ▪ Shows on graph that $\Delta y = 4$ and $\Delta x = 3$ or ▪ States that $\frac{\text{rise}}{\text{run}} = \frac{8}{6} = \frac{4}{3}$ <p><u>Finding y-intercept:</u></p> <ul style="list-style-type: none"> ▪ Using Slope-intercept: $3 = 4/3(6) + b$, $3 = 8 + b$, $b = -5$ or ▪ Using Point-slope: $y - 3 = 4/3(x - 6)$, $y - 3 = 4/3x - 8$, $y = 4/3x - 5$ or ▪ Shows that $(0, -5)$ is a point on the line by going down 8 units and to the left 6 units from point $(6, 3)$, or going down 4 units and to the left 3 units TWICE to get to $(0, -5)$. <p>Or</p> <p>1 ½ points: • Correct equation in slope-intercept form with correct and complete procedure shown for finding either the slope or y-intercept, but not both. or</p> <ul style="list-style-type: none"> • Equation is correct but not in slope-intercept form, with work or explanation: Ex: $y - 3 = 4/3(x - 6)$ with support for m or • Incorrect equation due to 1 calculation error in finding m or b – Correct procedures used. <p>Or</p> <p>1 point: • Correct equation with no work shown.</p> <ul style="list-style-type: none"> • Missing or incorrect equation, correct slope and y-intercept, all work shown. or • Incorrect equation due to more than 1 calculation error – Correct procedures used. <p>Or</p> <p>½ point: • Correct slope (with support) OR correct y-intercept (with support).</p> <ul style="list-style-type: none"> • Correct slope AND y-intercept – no work shown or explained.

PART II Released Items – 2006 Geometry

GEOMETRY OPEN-RESPONSE ITEM E

- E. The school band is making a banner. The banner is made up of 4 congruent rectangles with a congruent triangle in each rectangle as shown below. The width of the banner is $\frac{1}{6}$ of the total length of the banner.



(Not drawn to scale.)

1. What is the perimeter of the banner? Show or explain all of your work even if you use mental math or a calculator.

The band plans to use red fabric for the triangle shapes shaded in the figure shown above.

2. How many square inches of red fabric will be needed for the banner? Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM E

SCORE	DESCRIPTION
4	The student earns 4 points. Correct labels: Part 1 – Inches, Part 2 – No label required, but if given cannot be incorrect. The response contains no incorrect work.
3	The student earns 3–3 ½ points.
2	The student earns 2–2 ½ points.
1	The student earns ½–1 ½ points or some minimal understanding is shown: Ex. Part 1: $L = 24$ and $W = 4$ with no work and no other credit.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

PART II Released Items – 2006 Geometry

Solution and Scoring

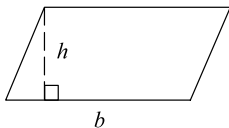
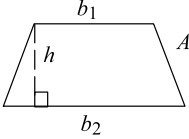
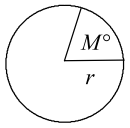
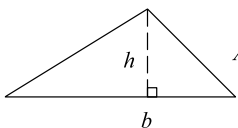
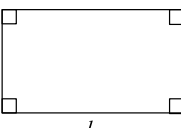
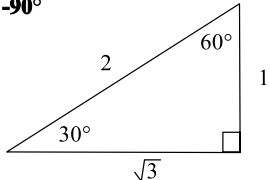
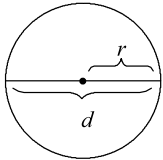
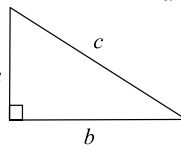
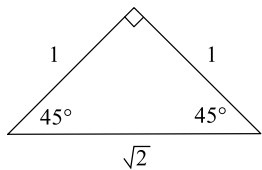
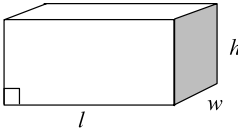
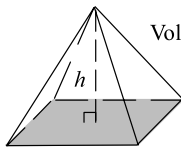
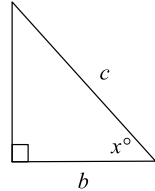
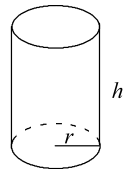
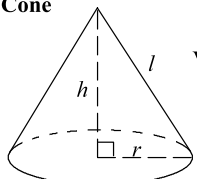
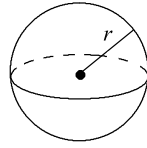
Part	Points
1	<p>2 points possible</p> <p>1 point: Correct answer: 56 (inches). Do not give credit for 56 if there is evidence of incorrect procedure: Ex: $24 + 24 + 6 + 6 = 56$</p> <p>AND</p> <p>1 point: Correct and complete procedure shown or explained. Work may contain a calculation error. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $L = 6 \times 4 = 24$ (not required) $W = 24 \times 1/6 = 4$ $P = 2(24) + 2(4) = 48 + 8 = \#$ or • “The length of one rectangle is 6 in. so I multiplied 6 by the # of rectangles and got 24. Then I took 1/6 of 24 which is 4. That’s the width. Then 2 times 24 plus 2 times 4 gave me the perimeter.” or • $W = 24 \div 6 = 4$, $24 + 24 + 4 + 4 = P$ <p>Note: Do not give credit for $w = 6$ unless a calculation error is obvious: Ex: $24 + 24 + 6 + 6 = 60$ (no credit – no obvious calculation error for w).</p> <p>Or</p> <p>½ point: Partially correct procedure shown or explained:</p> <ul style="list-style-type: none"> • Work is incomplete but correct procedures are used: Ex: $P = 24 + 24 + 4 + 4 = 56$ (no calculation of width). • 2 out of 3 correct procedures are shown <u>with no incorrect procedure:</u> Ex: Correctly finds $L = 24$ and $W = 4$, but doesn’t find P $L = 4 \times 6 = 24$, $W = 1/6(24) = 4$ Ex: Correct procedure to find $L(24)$ and P, ($w \neq 6$): $L = (2 + 4) = 6$, $4 \times 6 = 24$, $P = 2L + 2W$

PART II Released Items – 2006 Geometry

Solution and Scoring (Continued)

Part	Points
2	<p>2 points possible</p> <p>1 point: Correct answer: 48 (sq. in.) or Correct answer based on width found in Part 1. Do not give credit if there is evidence of incorrect procedure.</p> <p>AND</p> <p>1 point: Correct and complete procedure shown or explained. Work may contain a calculation or copy error or may be based on an incorrect width found in Part 1. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • “The area of 1 triangle is $\frac{1}{2}(4)(6) = 12$, so 4 triangles are $4 \times 12 = 48$.” or • $\frac{1}{2}(4)(6) = 12$, $12(4) = 48$ or • Finds area of un-shaded triangles and subtracts from area of rectangle to find area of shaded triangles: $\frac{1}{2}(4)(4) + \frac{1}{2}(4)(2) = 8 + 4 = 12$ $4(12) = 48$ (total area of un-shaded triangles) $4 \times 24 = 96$ (area of rectangle) $96 - 48 = 48$ (area of shaded triangles) or • Clear explanation “that within a rectangle, if a triangle has a base that is a side of the rectangle and a 3rd vertex on the opposite side, the area of the triangle will be equal to the sum of the areas of the 2 remaining triangles in the rectangle,” finds that area, and proceeds to find the total area of 4 triangles. <p>Or</p> <p>$\frac{1}{2}$ point: Partially correct procedure shown or explained:</p> <ul style="list-style-type: none"> • Work is incomplete but correct procedures are used: Ex: “The area of 1 triangle is 12 so they need $4 \times 12 = 48$.” (No work or explanation for finding area of triangle.) Ex: “The area of the triangle is $\frac{1}{2}(4)(6) = 12$.” (Finds the area of 1 triangle with work shown, but doesn’t proceed.) Ex: $4 \times 12 = 48$ • Correct procedures for finding area of 1 triangle and total shaded area.

End-of-Course Mathematics Reference Sheet

Parallelogram  $P = \text{sum of all sides}$ $A = bh$	Trapezoid  $A = \frac{h(b_1 + b_2)}{2}$	Arc and Sector  $\text{Arc Length} = \left(\frac{M}{360}\right) \times 2\pi r$ $\text{Sector area} = \left(\frac{M}{360}\right) \times \pi r^2$
Triangle  $P = \text{sum of all sides}$ $A = \frac{bh}{2}$	Rectangle  $P = 2l + 2w$ $A = lw$	30° -60° -90° 
Circle  $C = 2\pi r$ $C = \pi d$ $A = \pi r^2$ $\pi \approx 3.14$	Pythagorean Theorem $a^2 + b^2 = c^2$ 	45° -45° -90° 
Rectangular Solid  $\text{Volume} = lwh$ $\text{Surface area} = 2lw + 2lh + 2wh$	Pyramid  $B = \text{area of base (shaded)}$ $\text{Volume} = \frac{Bh}{3}$	Trigonometric Ratios  $\sin x^\circ = \frac{a}{c}$ $\cos x^\circ = \frac{b}{c}$ $\tan x^\circ = \frac{a}{b}$
Cylinder  $\text{Volume} = \pi r^2 h$ $\text{Surface area} = 2\pi rh + 2\pi r^2$	Cone  $l = \text{slant height}$ $\text{Volume} = \frac{\pi r^2 h}{3}$ $\text{Surface area} = \pi rl + \pi r^2$	Sphere  $\text{Volume} = \frac{4\pi r^3}{3}$ $\text{Surface area} = 4\pi r^2$

Miscellaneous Formulas	Area of an equilateral triangle	$A = \frac{s^2\sqrt{3}}{4}$ $s = \text{length of a side}$
	Distance	rate \times time
	Interest	principal \times rate \times time in years
	Sum of the angles of a polygon having n sides	$(n - 2)180^\circ$
	Distance between points on a coordinate plane	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
	Midpoint	$\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2}\right)$
	Slope of a nonvertical line (where $x_2 \neq x_1$)	$m = \frac{y_2 - y_1}{x_2 - x_1}$
	Slope intercept (where $m = \text{slope}$, $b = \text{intercept}$)	$y = mx + b$
	Last term of an arithmetic series	$a_n = a + (n - 1)d$
	Last term of a geometric series (where $n \geq 1$)	$a_n = ar^{n-1}$
	Quadratic formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
	Area of a square	$A = s^2$
	Volume of a cube	$V = s^3$
	Area of a regular polygon	$A = \frac{1}{2}ap$ $a = \text{apothem}$, $p = \text{perimeter}$

PART III Curriculum Framework – 2006 Geometry

The Arkansas Geometry Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1—LANGUAGE OF GEOMETRY (LG)	1. Students will develop the language of geometry, including specialized vocabulary, reasoning, and application of theorems, properties, and postulates.	<ol style="list-style-type: none"> Define, compare, and contrast inductive reasoning and deductive reasoning for making predictions based on real world situations. <ul style="list-style-type: none"> Venn diagrams matrix logic conditional statements (statement, inverse, converse, and contrapositive) Apply, with and without appropriate technology, definitions, theorems, properties, and postulates related to such topics as complementary, supplementary, vertical angles, linear pairs, and angles formed by perpendicular lines. Explore, with and without proper technology, the relationship between angles formed by two lines cut by a transversal to justify when lines are parallel. Give justification for conclusions reached by deductive reasoning.
2—TRIANGLES (T)	2. Students will identify and describe types of triangles and their special segments. Students will use logic to apply the properties of congruence, similarity, and inequalities. Students will apply the Pythagorean Theorem and trigonometric ratios to solve problems in real-world situations.	<ol style="list-style-type: none"> Identify and use the special segments of triangles (altitude, median, angle bisector, perpendicular bisector, and midsegment) to solve problems. Use trigonometric ratios (sine, cosine, tangent) to determine lengths of sides and measures of angles in right triangles, including angles of elevation and angles of depression.
3—MEASUREMENT (M)	3. Students will measure and compare, while using appropriate formulas, tools, and technology, to solve problems dealing with length, perimeter, area, and volume.	<ol style="list-style-type: none"> Apply, using appropriate units, appropriate formulas (area, perimeter, surface area, volume) to solve application problems involving polygons, prisms, pyramids, cones, cylinders, and spheres, as well as composite figures, expressing solutions in both exact and approximate forms. Relate changes in the measurement of one attribute of an object to changes in other attributes. Ex. How does changing the radius or height of a cylinder affect its surface area or volume? Use (given similar geometric objects) proportional reasoning to solve practical problems (including scale drawings).

*The Content Standards and Student Learning Expectations listed are those that specifically relate to the released test items in this booklet.

PART III Curriculum Framework – 2006 Geometry

The Arkansas Geometry Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
4—RELATIONSHIPS BETWEEN TWO- AND THREE-DIMENSIONS (R)	4. Students will analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	<ol style="list-style-type: none"> Explore and verify the properties of quadrilaterals. Solve problems using properties of polygons. <ul style="list-style-type: none"> sum of the measures of the interior angles of a polygon interior and exterior angle measure of a regular polygon or irregular polygon number of sides or angles of a polygon Identify and explain why figures tessellate. Investigate and use the properties of angles (central and inscribed), arcs, chords, tangents, and secants, to solve problems involving circles. Use orthographic drawings (top, front, side) and isometric drawings (corner) to represent three-dimensional objects. Draw, examine, and classify cross sections of three-dimensional objects.
5—COORDINATE GEOMETRY AND TRANSFORMATIONS (CGT)	5. Students will specify locations, apply transformations, and describe relationships using coordinate geometry.	<ol style="list-style-type: none"> Use coordinate geometry to find the distance between two points, the midpoint of a segment, and the slopes of parallel, perpendicular, horizontal, and vertical lines. Write equations of lines in slope-intercept form and use slope to determine parallel and perpendicular lines. Write, in standard form, the equation of a circle, given a graph on a coordinate plane or the center and radius of a circle. Draw and interpret the results of transformations and successive transformations on figures in the coordinate plane. <ul style="list-style-type: none"> translations reflections rotations (90°, 180°, clockwise and counterclockwise about the origin) dilations (scale factor)

*The Content Standards and Student Learning Expectations listed are those that specifically relate to the released test items in this booklet.

PART IV Item Correlation with Curriculum Framework – 2006 Geometry

Released Items for Geometry*

Strands	Content Standards
1— LANGUAGE OF GEOMETRY (LG)	1. Students will develop the language of geometry, including specialized vocabulary, reasoning, and application of theorems, properties, and postulates.
2— TRIANGLES (T)	2. Students will identify and describe types of triangles and their special segments. Students will use logic to apply the properties of congruence, similarity, and inequalities. Students will apply the Pythagorean Theorem and trigonometric ratios to solve problems in real-world situations.
3— MEASUREMENT (M)	3. Students will measure and compare, while using appropriate formulas, tools, and technology, to solve problems dealing with length, perimeter, area, and volume.
4— RELATIONSHIPS BETWEEN TWO- AND THREE-DIMENSIONS (R)	4. Students will analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.
5— COORDINATE GEOMETRY AND TRANSFORMATIONS (CGT)	5. Students will specify locations, apply transformations, and describe relationships using coordinate geometry.

Item	Strand	Content Standard	Student Learning Expectation
1	LG	1	1
2	CGT	5	1
3	M	3	2
4	LG	1	4
5	R	4	1
6	CGT	5	5
7	R	4	8
8	LG	1	1
9	LG	1	1
10	CGT	5	1
11	LG	1	1
12	LG	1	4
13	M	3	2
14	T	2	6
15	M	3	2
16	R	4	2
17	CGT	5	1
18	CGT	5	2
19	CGT	5	1
20	LG	1	5
21	LG	1	6
22	LG	1	4
23	R	4	7
24	CGT	5	2
25	M	3	2
26	M	3	4
27	LG	1	1
28	M	3	3
29	LG	1	1
30	R	4	2
31	CGT	5	5
32	M	3	3
33	LG	1	1

Item	Strand	Content Standard	Student Learning Expectation
34	CGT	5	5
35	R	4	3
36	CGT	5	5
37	R	4	2
38	T	2	6
39	M	3	3
40	LG	1	6
41	CGT	5	2
42	CGT	5	5
43	M	3	2
44	R	4	7
45	T	2	3
46	M	3	2
47	LG	1	1
48	R	4	8
49	CGT	5	5
50	LG	1	1
51	R	4	5
52	CGT	5	1
53	M	3	4
54	M	3	2
55	R	4	3
56	LG	1	5
57	M	3	2
58	M	3	4
59	LG	1	1
60	CGT	5	4
A	M	5	1
B	LG	1	1
C	T	3	2
D	CGT	2	6
E	M	3	2

*Only the predominant Strand, Content Standard, and Student Learning Expectation is listed for the Geometry items.



Arkansas Comprehensive Testing, Assessment, and Accountability Program

DEVELOPED FOR THE ARKANSAS DEPARTMENT OF EDUCATION, LITTLE ROCK, AR 72201